



GLOBUS MEDICAL

Small Group Breakout: LLIF
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Fusion Portfolio Minimally Invasive Surgery Biomaterials Motion Preservation

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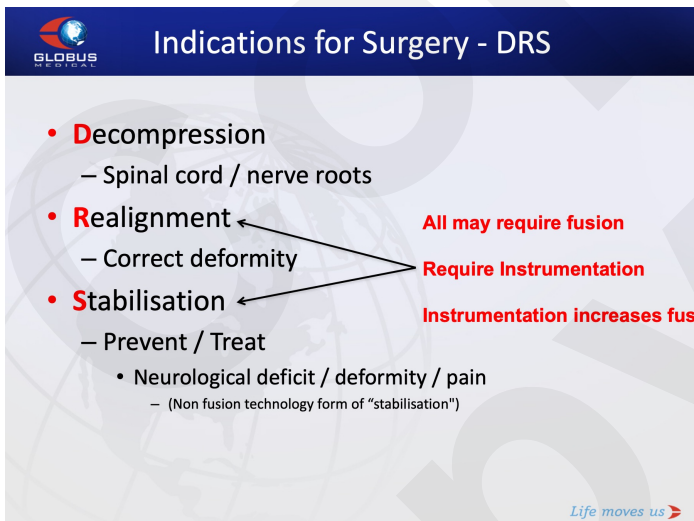
Techniques

- ALIF
- TLIF
- LLIF
- Perc Screws

Front Back and Sides



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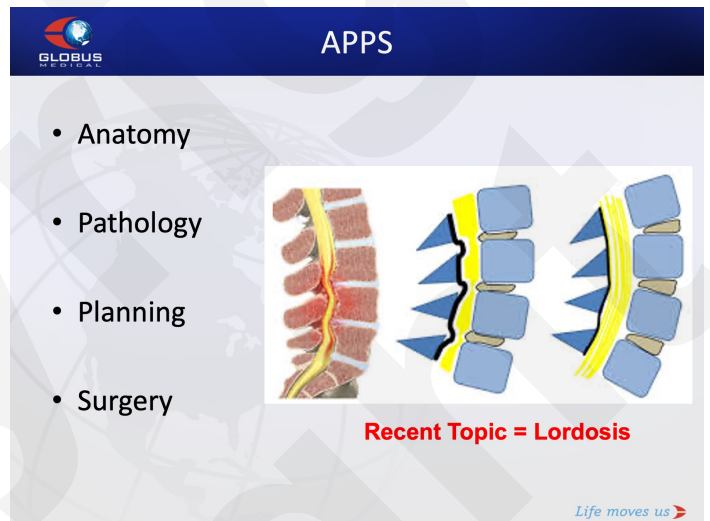


Indications for Surgery - DRS

- **Decompression**
 - Spinal cord / nerve roots
- **Realignment**
 - Correct deformity
- **Stabilisation**
 - Prevent / Treat
 - Neurological deficit / deformity / pain
 - (Non fusion technology form of "stabilisation")

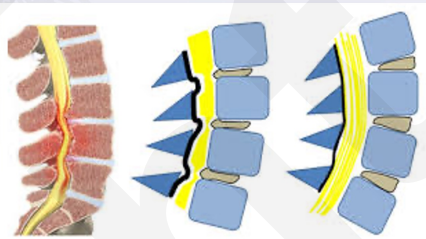
All may require fusion
Require Instrumentation
Instrumentation increases fusion

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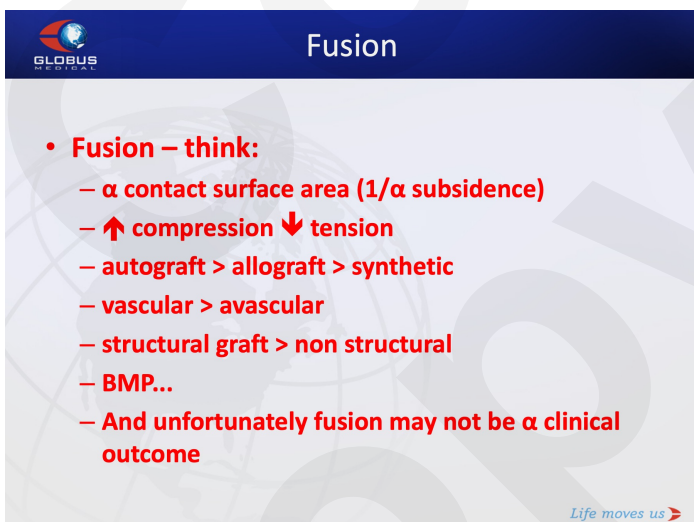
APPS

- Anatomy
- Pathology
- Planning
- Surgery



Recent Topic = Lordosis

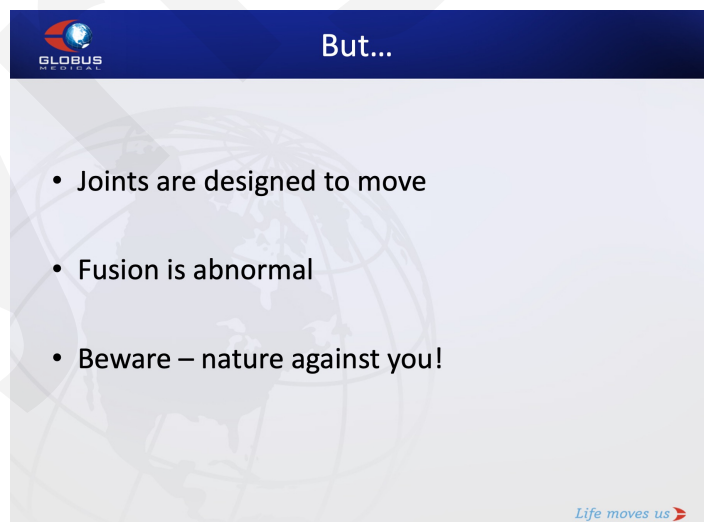
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Fusion

- **Fusion – think:**
 - $\propto$ contact surface area ($1/\alpha$ subsidence)
 - $\uparrow$ compression $\downarrow$ tension
 - autograft > allograft > synthetic
 - vascular > avascular
 - structural graft > non structural
 - BMP...
 - And unfortunately fusion may not be α clinical outcome

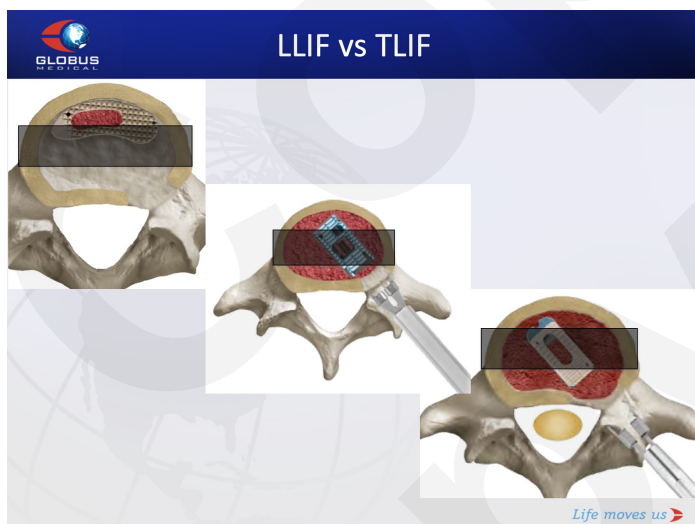
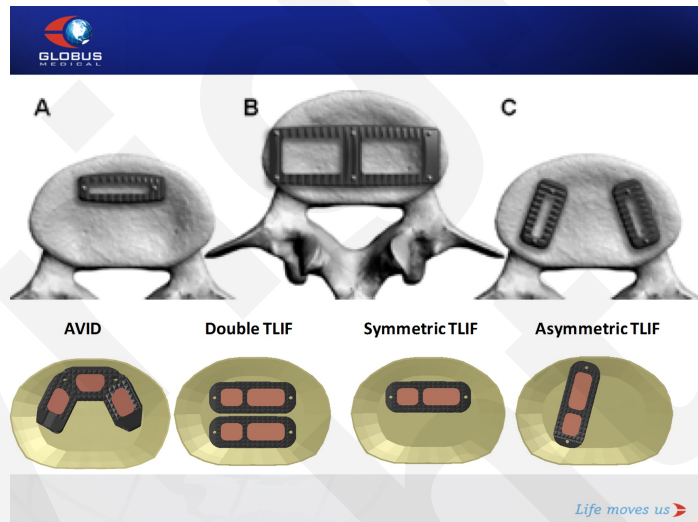
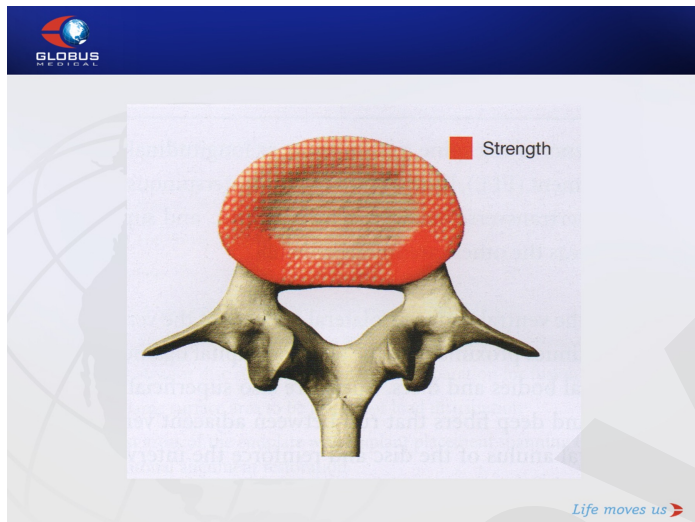
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But...

- Joints are designed to move
- Fusion is abnormal
- Beware – nature against you!

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Surgical Options		
	Advantages	Disadvantages
PLIF	Bilateral access to canal, restores lordosis	Painful, infection, neural / dural injury scarring, limited higher up
Mini Open and MIS PLIF	Less painful, low infection, less blood loss, faster recovery	Fusion?, neural / dural injury scarring, limited higher up
Open TLIF	Access, fusion	Painful, infection, neural / dural injury scarring, endplate damage / subsidence
Mini Open TLIF	Less painful, low infection, fusion, less blood loss	Neural / dural injury scarring, disc preparation, endplate damage / subsidence
MIS TLIF	Even less pain, low infection, avoids paraspinal muscle damage, less blood loss, faster recovery	Fusion?, neural / dural injury scarring, disc preparation, endplate damage / subsidence
LLIF + Perc Post	Good fusion, less painful, low infection, T5-L5, avoids canal, less visceral vessel injury then ALIF, avoids paraspinal muscle damage, less blood loss, faster recovery	L4/5??, L5/S1 – No, endplate damage / subsidence, plexus injury, diaphragm injury, pneumothorax
ALIF + Perc Post	Best fusion, best restoration lordosis, less painful, low infection, avoids canal, avoids paraspinal muscle damage, mostly less blood loss than a TLIF	Access Surgeon, ilio-lumbar vein, visceral vessel injury, ileus, not above L3

1. Have A Simple Strategy

- Is an interbody fusion required:
 - Restore foraminal height (up / down)
 - Improve fusion
 - Revision of failed posterolateral fusion
 - Restore lordosis / correct laterolisthesis
 - Biomechanics – shear / large disc height / entire facet removed / long construct involving L5/S1

2. Have A Simple Strategy

- Is a direct posterior decompression required? (vs indirect ligamentotaxis)
- How many levels need to be fused?
- How long will it take?
- Is there a slip – how big / is it reducible?
- Etcetera...
- **DO THE APPROPRIATE OPERATION FOR THE PATIENT AND THEIR PATHOLOGY AND YOUR SKILLS / ABILITY**

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LLIF

- LLIF
 - Tension intact ALL / PLL
 - Indirect decompression
 - Large surface area for fusion across strongest area of bone
 - Good for laterolisthesis > rotated spine
 - Multiple levels same incision
 - (Obese people - fat can be swept away)

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LLIF Algorithm First Question

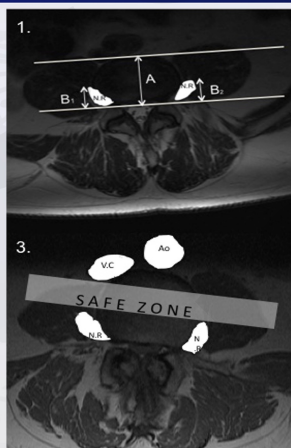
- Contraindications:
 - L5/S1
 - Low seated L4/5 (look at crests)
 - High grade slip
 - Retroperitoneal scarring / pathology
 - Medical comorbidities / contraindications to surgery
- Yes – then use other technique

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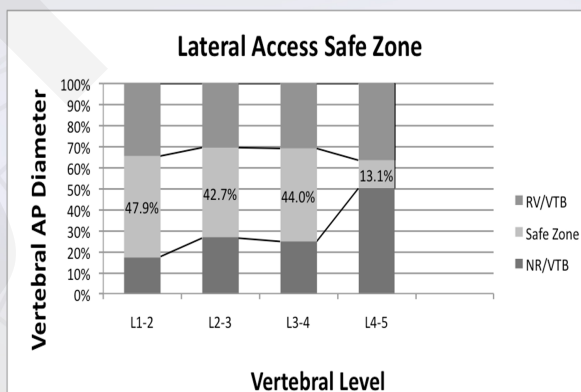
LLIF Algorithm Second Question

- Is direct decompression of spinal canal needed?
 - Yes
 - Consider single procedure / approach with TLIF / PLIF
 - Surgical philosophy / ability – 2 stages with LLIF may give better deformity correction / fusion

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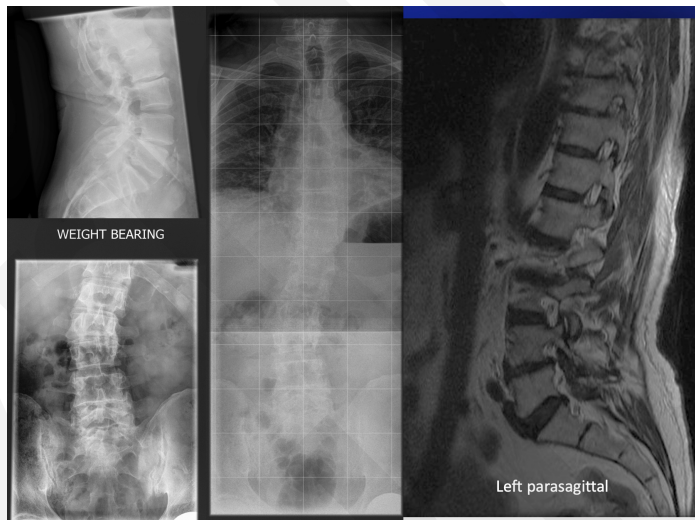
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- 55 year old man
- Agonising left L2 pain
- Mild right L5 pain
- Well built goes to gym regularly
- Failed conservative management

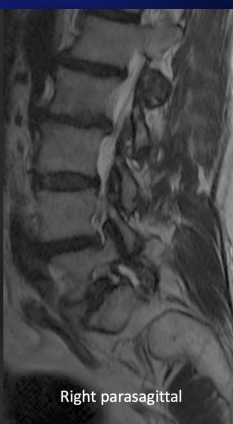
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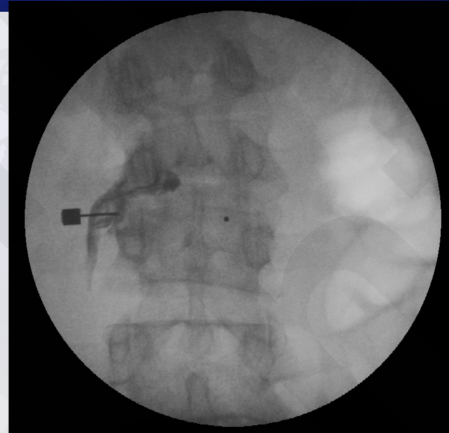
WEIGHT BEARING



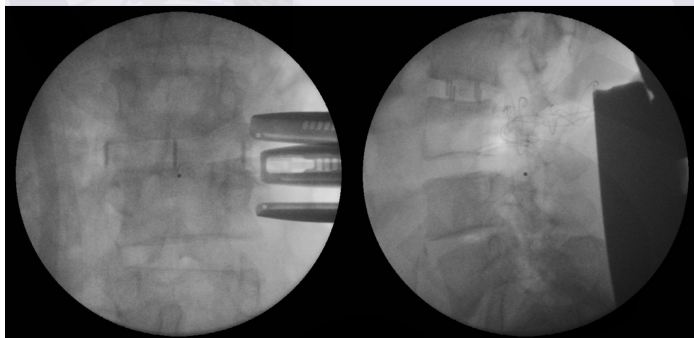
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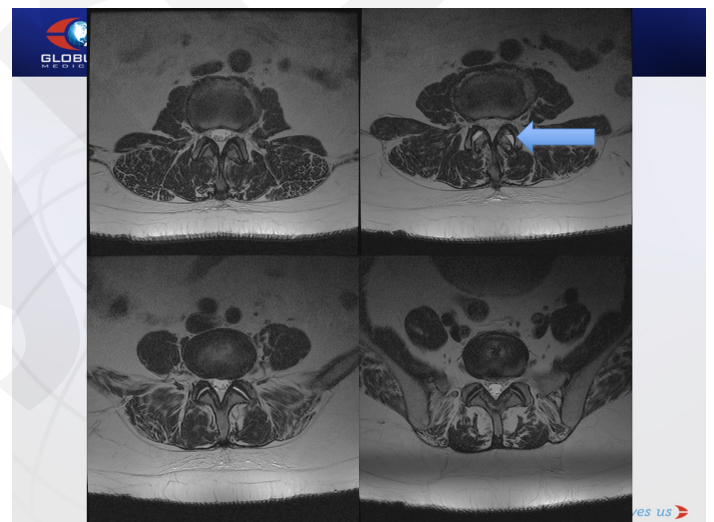
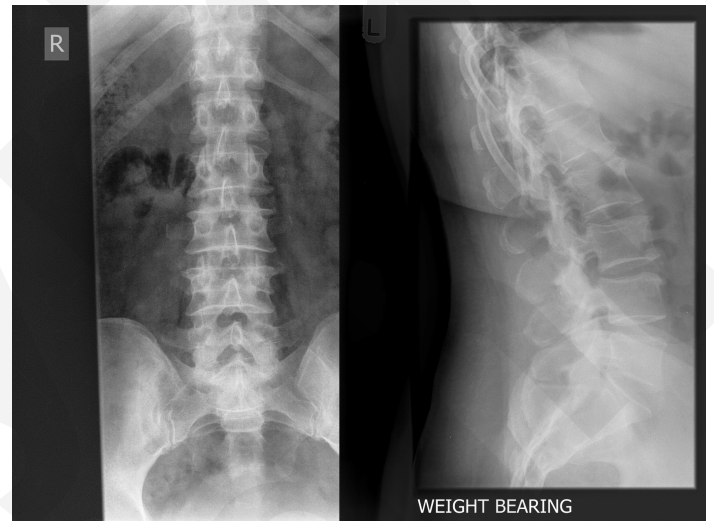
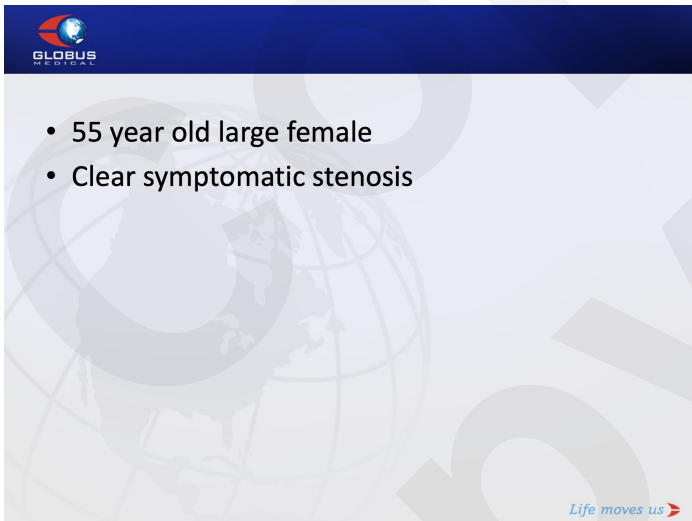
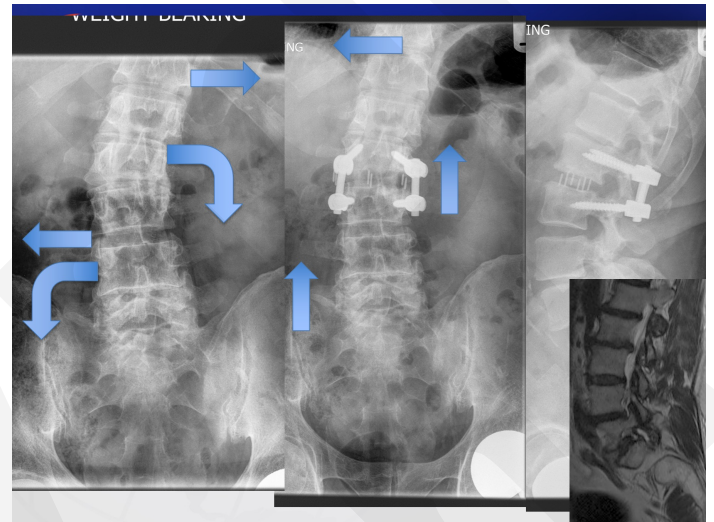
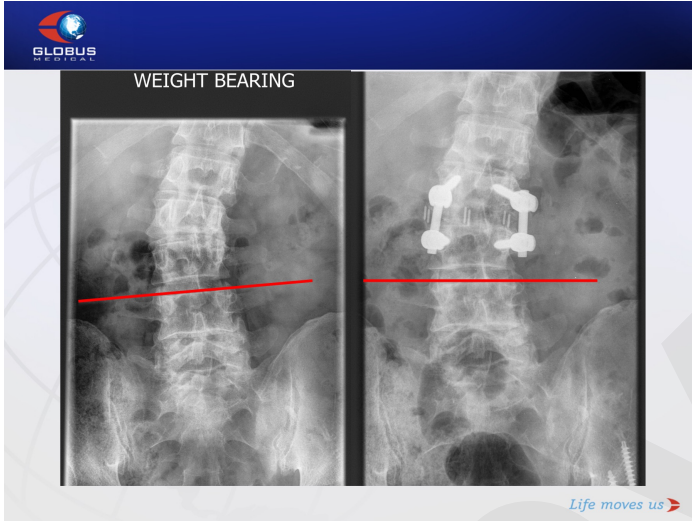


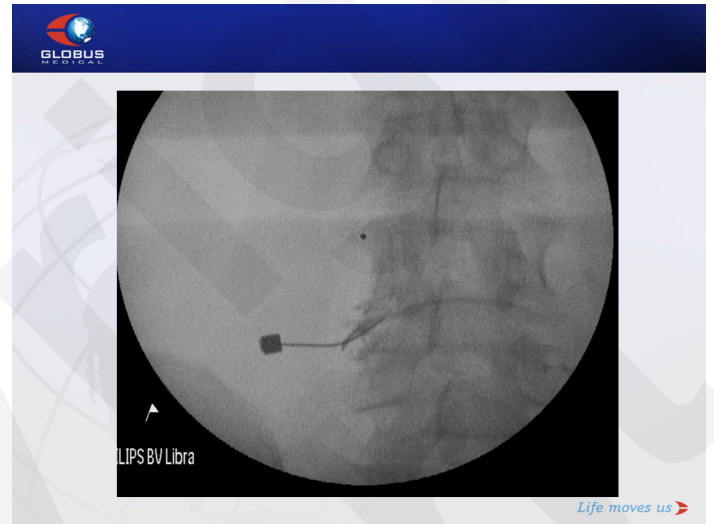
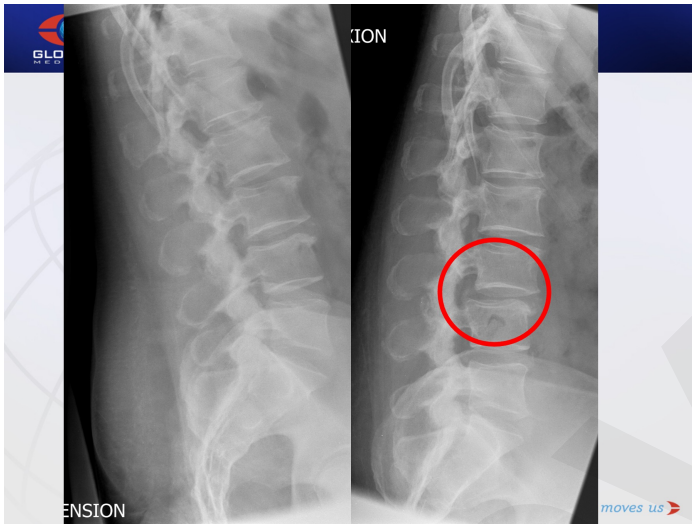
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- Dynamic compression / symptoms
- Large disc space
- Unstable L3/4 level
- Avoid the nerves

